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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/805,993

Filing Date: 22 March, 2004

Appellant(s): Schofield et al.

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John C. Gorecki  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 11 June, 2010 appealing from the Office action mailed 16 October, 2009.

**1. Real Party in Interest**

A statement identifying by name the real party in interest is contained in the Appeal Brief.

**2. Related Appeals and Interferences**

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal

**3. Status of Claims**

The statement of the status of claims contained in the Appeal Brief is correct.

**4. Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the Appeal Brief is correct.

**5. Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the Appeal Brief is correct.

**6. Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal contained in the Appeal Brief is correct.

## 7. **Claims Appendix**

The copy of the appealed claims contained in the Appeal Brief is correct.

## 8. **Evidence relied Upon**

US 5,031,089	Liu et al.	07-1991
US 6,263,368 B1	Martin, Jean-Christophe	07-2001
US 6,301,617 B1	Carr, Wayne J.	10-2001
US 6,389,448 B1	Primak et al.	05-2002
US 2002/0016718 A1	Rothschild et al.	02-2002

## 9. **Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 37 - 42 and 45 - 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothschild et al. (US PGPUB 2002/0016718 A1) and in further view of Primak et al. (US 6,389,448 B1) and in further view of Martin (US 6,263,368 B1).

### **CLAIMS 37 and 45**

Rothschild as shown discloses a medical image management system with the following limitations:

- *a network element coupled to a network and configured to send and receive data via the network;* (see at least Rothschild paragraph 0039, 0043, 0136, 0142 and Figure 1);
- *receiving, by the network service, medical image data having embedded therein instructions associated with a task to be performed by at least one of the image archive resources in connection with the medical image data;* (see at least Rothschild paragraph 0036, 0046, 0143 and 0144);
- *transferring, by the network service, the medical image data to the selected one of the plurality of image archive resources;* (see at least Rothschild paragraph 0039, 0143 and 0144).

Rothschild as shown discloses the limitations shown above. Rothschild may or may not specifically disclose that the medical image has “*embedded therein instructions associated with a task to be performed by at least one of the image archive resources in connection with the medical image data*”. However, Rothschild does disclose that the medical image is stored and transmitted in DICOM format. It is old and well known in the medical imaging arts that the

DICOM format includes instructions for tasks to be performed relative to the medical image. Therefore, the medical image management system of Rothschild anticipates that instructions associated with a task to be performed in connection with the medical image data are included in the DICOM format.

Rothschild as shown discloses the limitations shown above. Rothschild may or may not specifically disclose the following limitations, however, Primak does:

- *a network service coupled to the network element; (see at least Primak column 3 line 49 – 52 and column 4 line 30 - 37);*
- *monitoring, by a network service, a parameter associated with each of the plurality of image archive resources indicative of the available capacity of each of the plurality of image archive resources; (see at least Primak column 4 line 7 – 19 and line 30 – 37 and Figure 2b);*
- *selecting, by the network service, one of the plurality of image archive resources to be used to perform the task in connection with the medical image data using, as a selection function, the available capacity of each of the plurality of image archive; (see at least Primak column 4 line 38 to column 5 line 22).*

Primak discloses a load balancing system which includes monitoring a parameter indicative of available capacity. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild so as to have included monitoring a parameter indicative of available capacity, in accordance with the teaching of Primak, in order to dynamically distribute the load between servers in a

server cluster, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

The combination of Rothschild/Primak as shown discloses the limitations shown above.

Rothschild/Primak may or may not specifically disclose the following limitations, however, Martin does:

- *determining, by the network service, a level of complexity of the task to be performed from the instructions associated with the task; (see at least Martin column 1 line 41 – 44; column 3 line 42 – 48; column 4 line 3 – 5; column 8 line 14 - 17);*
- *selecting, by the network service, one of the plurality of image archive resources to be used to perform the task in connection with the medical image data using, as a selection function, the level of complexity of the task to be performed; (see at least Martin column 1 line 41 – 44; column 3 line 30 – 48; column 4 line 3 – 5; column 8 line 38 - 43).*

Martin discloses a load balancing system which includes determining the complexity of the task to be performed. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak so as to have included determining the complexity of the task to be performed, in accordance with the teaching of Martin, in order to dynamically distribute the load between servers in a server cluster based on task complexity, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

Examiner notes that Martin discloses that complexity is based on a number of criteria including: network loading, processor loading and packet or byte counts for example. These criteria are the

same as, or are directly related to "complexity" as disclosed in the specification of the present application in paragraph 0022.

The combination of Rothschild/Primak/martin as shown discloses the limitations shown above.

Rothschild/Primak/Martin may or may not specifically disclose the following limitations:

- *extracting, by the network service, the instructions associated with the task from the medical image data.*

However, Rothschild does disclose that the medical image is stored and transmitted in DICOM format. It is old and well known in the medical imaging arts that the DICOM format includes instructions for tasks to be performed relative to the medical image. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak/Martin so as to have included extracting a task from the medical image data file transmitted in the DICOM format, in order to retrieve the Service Classes embedded in the DICOM message, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

### **CLAIMS 39 and 47**

The combination of Rothschild/Primak/Martin as shown discloses the limitations shown above with respect to Claims 37 and 45 respectively. Rothschild also discloses the following limitations:

- *the medical image data is formatted as a DICOM message;* (see at least Rothschild paragraph 0040 and 0041);

**CLAIMS 41, 42, 49 and 50**

The combination of Rothschild/Primak/Martin as shown discloses the limitations shown above with respect to Claims 37 and 45 respectively. Additionally, Primak discloses the following limitations:

- *selecting the one of the resources having the greatest available capacity relative to the complexity level of the task to be performed;* (see at least Martin column 1 line 41 – 44; column 3 line 30 – 48; column 4 line 3 – 5; column 8 line 38 - 43).
- *the parameter is one of the group consisting of the PACS server load or the PACS storage time;* (see at least Primak column 4 line 12 – 19);
- *the parameter is one of the group consisting of the resource load, the capacity of the network, or the congestion of the network;* (see at least Primak column 4 line 12 – 19).

Primak discloses a load balancing system which includes monitoring a parameter indicative of available capacity. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild so as to have included monitoring a parameter indicative of available capacity, in accordance with the teaching of Primak, in order to dynamically distribute the load between servers in a server cluster, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

**CLAIMS 38 and 46**

The combination of Rothschild/Primak/Martin as shown discloses the limitations shown above with respect to Claims 37 and 45 respectively. Additionally, Martin discloses the following limitations:

- *selecting the one of the resources having the greatest available capacity relative to the complexity level of the task to be performed;* (see at least Martin column 1 line 41 – 44; column 3 line 30 – 48; column 4 line 3 – 5; column 8 line 38 - 43).

Martin discloses a load balancing system which includes determining the complexity of the task to be performed. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak so as to have included determining the complexity of the task to be performed, in accordance with the teaching of Martin, in order to dynamically distribute the load between servers in a server cluster based on task complexity, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

Examiner notes that Martin discloses that complexity is based on a number of criteria including: network loading, processor loading and packet or byte counts for example. These criteria are the same as, or are directly related to "complexity as disclosed in the specification of the present application in paragraph 0022.

**CLAIMS 40 and 48**

The combination of Rothschild/Primak/Martin as shown discloses the limitations shown above with respect to Claims 37 and 45 respectively. The combination of Rothschild/Primak/Martin may or may not specifically disclose the following limitations:

- *the plurality of image archive resources comprises a plurality of Picture Archive System (PACS).*

However, Rothschild discloses a medical image management system that contains all of the features of a PACS. Therefore it would be obvious to one of ordinary skill in the art to modify Rothschild to include the term PACS, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

Claims 43, 44, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothschild et al. (US PGPUB 2002/0016718 A1) and in further view of Primak et al. (US 6,389,448 B1) and in further view of Martin (US 6,263,368 B1), and in further view of Carr (US 6,301,617 B1) and in further view of Liu et al. (US 5,031,089).

**CLAIMS 43 and 51**

The combination of Rothschild/Primak/Martin as shown discloses the limitations shown above with respect to Claims 37 and 45 respectively. The combination of Rothschild/Primak/Martin may or may not specifically disclose the following limitations

- *selecting, by the network service one of the plurality of resources to transfer the task to be executed thereby, the selection based on the priority level of the resource; (see at least Carr column 4 line 5 – 7).*

Carr discloses a resources selection system which includes extracting a task from the data file and assigning a priority level to resources. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak/Martin so as to have included selecting a resource based on priority level of the resource, in accordance with the teaching of Carr, in order to dynamically distribute the load between servers in a server cluster based on server priority, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

The combination of Rothschild/Primak/Martin as shown discloses the limitations shown above with respect to Claims 37 and 45 respectively. Rothschild may or may not specifically disclose the following limitations, however, Liu does:

- *selecting, by the network service one of the plurality of resources to transfer the task to be executed thereby, the selection based on the priority level of the task;* (see at least Liu column 1 line 60 – 66 and Claim 4).

Liu discloses a resources allocation system which includes assigning a priority level to a task. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak/Martin so as to have included assigning a priority level to a task, in accordance with the teaching of Liu, in order to dynamically distribute the load between servers in a server cluster based on task priority, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

**CLAIMS 44 and 52**

The combination of Rothschild/Primak/Martin/Carr/Liu as shown discloses the limitations shown above with respect to Claims 43 and 51 respectively. Additionally, Carr discloses the following limitations:

- *selecting the one of the plurality of resources having a priority less than or equal to the priority level of the task; (see at least Carr column 4 line 5 – 7).*

Carr discloses a resources selection system which includes extracting a task from the data file and assigning a priority level to resources. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak/Martin/Liu so as to have included extracting a task from the data file and assigning a priority level to resources, in accordance with the teaching of Carr, in order to dynamically distribute the load between servers in a server cluster based on server priority, since so doing could be performed readily and easily by any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

The combination of Rothschild/Primak/Martin/Carr does not specifically disclose *the priority level of the task*; however, Liu in at least Liu column 1 line 60 – 66 and Claim 4 does.

Liu discloses a resources allocation system which includes assigning a priority level to a task. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the medical image management system of Rothschild/Primak/Martin/Carr so as to have included assigning a priority level to a task, in accordance with the teaching of Liu, in order to dynamically distribute the load between servers in a server cluster based on task priority, since so doing could be performed readily and easily by

any person of ordinary skill in the art, with neither undue experimentation, nor risk of unexpected results.

## 10. Response to Arguments

In the Appeal Brief filed 11 June, 2010 Appellant makes the following arguments:

### **Argument 1**

Appellant argues that neither Primak or Marin teaches load balancing based on the complexity of the task. Examiner respectfully disagrees.

Primak discloses that the SYN packet is used to calculate a connection value for the requested task. Each SYN packet is evaluated and a connection value is calculated. Only connection values that fall within a server's *available capacity* are accepted. It would be obvious to one of ordinary skill in the art that the calculated SYN packet connection value is directly related to the complexity of the request.

Martin discloses that prior art solutions assume that each request has the same load result and therefore fails to address the real load generated by each request (Martin column 1 line 49 – 51), and that different request can lead to significantly different processing requirements and traffic volumes (Martin column 2 line 28 and 29). Martin further discloses that the increase in the amount of data returned in response to a user request tend to be network link bound (Martin column 2 line 61 – 65). Martin concludes that monitoring network link traffic represents the complexity of the requested tasks. Complexity is based on a number of criteria including: network loading, processor loading and packet or byte counts for example. These criteria are the

same as, or are directly related to "complexity" as disclosed in the specification of the present application in paragraph 0022. (amount of resources).

**11. Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related appeals and interferences section of this Examiner's Answer.

**12. Conclusion**

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/J. A. P./  
Examiner, Art Unit 3686  
Date: 7 July, 2010

/Gerald J. O'Connor/  
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Application: 10/805,993

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